

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN THAT I, JAMES M. GALVEZ, a citizen  
of the United States of America, residing in San Dimas,  
in the County of Los Angeles, State of California, have  
invented a new and useful improvement in

WORK LIGHT WITH HINGED LENS

## BACKGROUND OF THE INVENTION

This application is a continuation-in-part of pending U.S. Design application Serial No.29/176,538, filed February 25, 2003.

This invention relates generally to illumination apparatus, and more particularly to an improved and rugged illumination device for use in workplaces, and enabling quick access to a bulb or bulbs, such as a fluorescent bulb.

There is need for devices as referred to, which enable easy and safe endwise removal and replacement of elongated bulbs. There is also need for direct access to such elongated bulbs, along their lengths, to facilitate such removal and replacement.

Further there is need for provision of such direct access, while at the same time retaining an elongated lens to the device, to prevent damage of the lens during such bulb removal and replacement.

## SUMMARY OF THE INVENTION

It is a major object of the invention to provide an improved illumination device meeting the

above described needs. Basically, the preferred embodiment of a device meeting such needs includes:

a) a housing having a first elongated section and a second elongated section extending endwise relative to the first section,

b) and an elongated lens assembled to the second section and having hinge support at or near one end of the lens to enable jaw-like opening bodily swinging the lens about a hinge support axis defined by said hinge support, to gain access to elongated illumination bulb means carried by and within by the second elongated section.

As will appear, the lens may preferably have U-shaped curvature in planes along the lens length and in planes normal to the elongation direction of the lens.

Another object is to provide the housing second section with at least one L-shaped arm extending, with curvature matching lens curvature, toward said hinge support, proximate said one end of the lens.

A further object is to locate the direction of elongation of the second section to be angled at between  $3^{\circ}$  and  $15^{\circ}$  relative to the direction of elongation of the first section, said hinge support protectively

located at or near an obtuse angle defined by said first and second section directions of elongation.

A feature of the invention adding to compactness and protection, is to provide a plane defined by the two directions of elongation, and which bisects the lens, lengthwise thereof. The lens may advantageously have U-shaped curvature along its length for wide light distribution, the lens remaining intersected by the defined plane as to the lens swings with jaw-like motion, about the hinge support. In this regard, the second section preferably includes a second L-shaped arm which extends with curvature matching lens curvature, toward said hinge support, proximate said one end of the lens, whereby said one end of the lens is protectively subtended by both of said second section L-shaped arms.

These and other objects and advantages of the invention, as well as the details of an illustrative embodiment, will be more fully understood from the following specification and drawings, in which:

## DRAWING DESCRIPTION

Fig. 1 is a perspective view showing a preferred illumination device;

Fig. 2 is an elevation view showing the front side of the Fig. 1 device;

Fig. 3 is an elevation view showing the rear side of the Fig. 1 device;

Fig. 4 is a left side elevation view of the Fig. 1 device;

Fig. 5 is a top plan view of the Fig. 1 device;

Fig. 6 is a bottom plan view of the Fig. 1 device.

## DETAILED DESCRIPTION

In the drawings, and as shown, illumination device 10 includes two sections 10a and 10b. Section 10a is lengthwise elongated and has an inwardly sunk, outwardly convex, elongated hand grip surface portion 11 between end flanges 12 and 13. Arcuate protuberances 11a project outwardly from 11, and are spaced lengthwise of 10a to provide finger grippable sub-surfaces. An

electrical cord 14 extends to the end of section 10a, to supply electrical current to ballast circuitry housed within 10a. An alternative electrical plug is shown at 14a.

5                   Section 10b of the device 10 is elongated and extends endwise relative to section 10a, the directions of elongation of the sections 10a and 10b respectively indicated by arrows 15a and 15b. Arrow 15b is canted relative to arrow 15a, and at angle  $\alpha$ , where  $\alpha$  is  
10                   between 5° and 15°, enhancing illumination utility of the device, as in difficult to access work spaces.

                  The drawings also show an elongated lens 20 assembled to the second section 10b, and in such a way as to have hinge support at 21, proximate one end of the  
15                   elongated lens. Note the lens carrier 22 projecting away from the lens, and having a smooth convex surface at 22a. Carrier fits between two like laterally projecting supports 23 and 24 respectively located on the forwardly jutting portions 25a and 26a of two  
20                   L-shaped arms 25 and 26. Portions 25a and 26a have curvature closely matching lens curvature. Those arms have edge portions 25b and 25c, and 26b and 26c bounding

the lens 20 at spaced locations along its length, and  
along the lower extent of its U-shaped configuration, as  
shown. As the lens is pivoted away from arms 25 and 26  
about the axis of the hinged support 21, its edge  
portions move away from the protective L-shaped arms.  
The closed lens is protected from impact with other  
objects or surfaces, by U-shaped bumper 30 extending  
about the U-shaped upper end extent of the lens, and by  
the sidewardly jutting arm portions 25a and 26a and  
structure 23 and 24. Protective arms 25 and 26 may be  
considered as parts of the upper section 10b. An  
identification latch is applied, at 90°.

Arms 25 and 26 are also curved, along their  
length, to extend at 25d and 26d to extend at the rear  
side of the lens, and protect the elongated fluorescent  
bulb or bulbs 36 within the interior of 10b, and facing  
the lens. When the lens is pivoted forwardly, and  
clockwise in Fig. 4, to give access to the interior of  
10b, from the top right, the bulb or bulbs can be easily  
removed and replaced, without complete removal of the

lens. The lens may thereafter be easily closed back into Fig. 4 position, fitting to protective arms 25 and 26.

The two arms 25 and 26 may be held in Figs. 3 and 4 position, by a fastener 40 inserted through aligned retainers 38 and 39 integral with the upper extents of the arms, and in or close to the plane of curved bumper 30. The top 20a of the lens has a transverse edge 20aa which meets transverse edges 25ee and 26ee of the tops 25e and 26e of the arms. See Fig. 5.

The obtuse interior angle formed by and between the two sections 10a and 10b, serves to protect the hinging zone between the sections, as in case of dropping of the device.

An ON-OFF switch is seen at 42; and a device support or hinging hook 41 protrudes from the end of upper section 10b, formed by upper ends of arms 52 and 26.

The relatively angled direction of elongation, at the axes of sections 10a and 10b, define a plane 50 which bisects the lens, lengthwise thereof. The lens



has U-shaped curvature along its length, which remains intersected by the plane, as the lens swings with jaw-like movement about said hinge support. That plane 50 also bisects the lens hinged support. See Fig. 2.

5                   A cylindrical connection 60 extends between and supports sections 10a and 10b. It has detent ribs 61 spaced about its surface, to engage a holder for rotatably supporting auxiliary equipment, with adjustable detent action auxiliary equipment.

10                  Connection 60 has reduced and exposed diameter relative to sections 10a and 10b, whereby such rotatable auxiliary equipment is retained endwise between 10a and 10b, in adjustably rotated position.

15                  The following claims are intended to cover the design structure as shown in the drawings, and equivalents thereof.